

Tobacco Industry Control of Menthol in Cigarettes and Targeting of Adolescents and Young Adults

Jennifer M. Kreslake, MPH, Geoffrey Ferris Wayne, MA, Hillel R. Alpert, ScM, Howard K. Koh, MD, MPH, and Gregory N. Connolly, DMD, MPH

The future of the tobacco industry depends on maintaining current users and recruiting new users to replace older smokers who quit or die from tobacco-related diseases. The industry develops product innovations to encourage experimentation and use among targeted groups. Although the primary goal is to promote or maintain nicotine addiction, new products can also enhance appeal, facilitate nicotine dosing (the amount, method, and frequency of nicotine ingestion that is characteristic of cigarette smoking), and mask toxic and irritating effects.

Menthol, a monocyclic terpene alcohol that acts as a stimulant for cold receptors, is used as an additive in approximately 90% of cigarettes manufactured in the United States.¹

Most of these cigarettes contain imperceptible amounts of menthol (approximately 0.03% of cigarettes' tobacco weight), but tobacco companies promote specific brands as mentholated.¹ These brands, which contain between 0.1% and 1.0% of their tobacco weight in menthol, impart a noticeable cooling sensation and mintlike flavor when inhaled. Brands marketed as menthol cigarettes composed 27% of the US cigarette market in 2005.²

Hersey et al. found that menthol use among adolescents increased between 2000 and 2002, with the highest use among younger, newer smokers, and suggested that menthol cigarettes may be a starter product for adolescents.³ Younger smokers may tolerate menthol cigarettes, with their milder sensory properties, better than harsher nonmenthol cigarettes. In cigarettes formulated with lower levels of menthol, so that the menthol flavor and effect are less dominant, the menthol primarily masks harshness, making smoking initiation easier.^{4–8} Adolescents who experience fewer adverse physiological effects from smoking are more likely to progress from experimentation to regular smoking.^{8,9}

It is not known whether tobacco companies have systematically altered menthol content

in brands to target and recruit new smokers. Few published studies have examined differences in the physical design of menthol cigarettes.^{10–16} Celebucki et al. characterized levels of menthol in 48 commercial cigarette varieties,¹⁷ and a recent paper by Kreslake et al. described factors associated with preferred menthol levels among smokers, including age, race/ethnicity, and duration of menthol use.⁸

Three major brands (Kool, Salem, and Newport) have dominated the menthol market, and each features distinct sensory attributes targeted to specific groups. Kool has traditionally been the strong menthol brand, smoked primarily by older (aged ≥ 35 years) African American men who are long-term smokers.^{8,18} Salem is used primarily by older smokers and female smokers.¹ Newport has lower levels of menthol and is the most popular brand among younger African American smokers (69% of smokers in middle school and high school used Newport in 2000); it is the second leading brand after Marlboro among all adolescents.^{1,19}

We explored tobacco industry manipulation of menthol in brands as a strategy to appeal to adolescents and young adults and the repercussions in product design, advertising

Objectives. We examined whether tobacco manufacturers manipulate the menthol content of cigarettes in an effort to target adolescents and young adults.

Methods. We analyzed data from tobacco industry documents describing menthol product development, results of laboratory testing of US menthol brands, market research reports, and the 2006 National Survey on Drug Use and Health.

Results. The tobacco industry attracted new smokers by promoting cigarettes with lower menthol content, which were popular with adolescents and young adults, and provided cigarettes with higher menthol content to long-term smokers. Menthol cigarette sales remained stable from 2000 to 2005 in the United States, despite a 22% decline in overall packs sold.

Conclusions. Tobacco companies manipulate the sensory characteristics of cigarettes, including menthol content, thereby facilitating smoking initiation and nicotine dependence. Menthol brands that have used this strategy have been the most successful in attracting youth and young adult smokers and have grown in popularity. (*Am J Public Health.* 2008;98:1685–1692. doi:10.2105/AJPH.2007.125542)

trends, and usage. We reviewed internal tobacco industry documents, conducted laboratory tests, examined industry marketing reports for advertising expenditures (for mentholated vs nonmentholated brands), and analyzed a national survey on usage.

METHODS

Internal Tobacco Industry Documents

We identified internal tobacco industry documents in databases at Tobacco Documents Online²⁰ and the Legacy Tobacco Documents Library.²¹ We used a snowball sampling design for text-based and index searches, with an initial set of keywords (e.g., *menthol level*, *menthol preferences*, *age*) that led to further search terms.

Relevant documents included (1) product development activities that referred to preferred levels of menthol content or delivery and (2) strategic plans and marketing objectives related to menthol products. Of the approximately 8 000 000 documents available in the archives, we analyzed approximately 580 documents dating from 1985 to 2007, 66 of which informed our research question and are cited in this article.

Laboratory Tests

Laboratory analyses were conducted by Arista Laboratories (Richmond, Virginia) on Kool Full Flavor, Kool Milds, Salem Full Flavor Green Label, Salem Full Flavor Black Label, Newport Full Flavor, Camel Menthol, Marlboro Menthol, and Marlboro Milds. We selected menthol brands with historically high market shares (Kool, Salem, Newport) as well as menthol varieties of brands known to be popular among adolescents (Marlboro, Camel). Cigarettes were analyzed for tar, nicotine, carbon monoxide, water, and menthol in smoke, as well as menthol and nicotine in the cigarette rod.

Machine smoking was conducted under Federal Trade Commission and more intensive Health Canada smoking conditions.²² Smoke condensate was collected on a Cambridge filter pad and analyzed by gas chromatography. Data were reported in milligrams per cigarette for each smoke sample. Smoke menthol and smoke nicotine were measured for the total cigarette as well as per puff, and brands were ranked according to these measures.

Menthol content in cigarettes was determined as a percentage of the weight of the tobacco in the cigarette rod.²³ The concentration of menthol was determined in milligrams per milliliter, and then sample mass and extraction volume were used to calculate results in milligrams per gram.

Survey Data

We analyzed data on menthol brand use by age and race/ethnicity from the National Survey on Drug Use and Health.¹⁹ This nationally representative survey provides annual estimates of the use of illicit drugs, alcohol, and tobacco among persons 12 years and older residing in US households. We performed cross-tabulations for age group and brand used most often among current smokers. A dichotomous menthol-use variable determined use among brands with menthol and nonmenthol varieties (Marlboro and Camel). In calculating confidence intervals and standard errors, we accounted for the complex sampling design of the survey with Survey Documentation and Analysis software, version 3.0 (Computer-Assisted Survey Methods Program, University of California, Berkeley).

We grouped respondents' ages as 12 to 17 years, 18 to 24 years, 25 to 34 years, and 35 years and older. We categorized race/ethnicity as White (non-Hispanic), African American (non-Hispanic), and Hispanic.

We obtained estimated quarterly magazine advertising volume for cigarettes and other tobacco products for 1998 to 2005 from custom reports prepared by a commercial vendor of product advertising data (TNS Media Intelligence, New York, New York) that monitors all major magazines published in the United States.

RESULTS

Strategic Use of Menthol Level

Internal tobacco industry documents revealed that menthol levels in cigarettes (measured as a percentage of tobacco weight) fall along a continuum that elicits differences in consumer perception. For example, R.J. Reynolds developed and tested a low-level menthol product (Salem Gold) with 0.12% menthol; at the other extreme, Lorillard explored a "super shot" menthol prototype with more than 1% menthol.^{24,25} Most commercial full-flavor menthol products fall between these extremes. For cigarettes at the lower end of this continuum, the sensory effects of menthol consist primarily of masking the taste of tobacco and reducing uncomfortable sensations at the back of the throat; as menthol content is increased, the cigarette provides a more intense menthol taste and characteristic coolness during respiration.^{5,17} Individuals apparently select their personal optimal menthol levels to create desired sensory effects while smoking.⁸

Tobacco companies researched how controlling menthol levels could increase brand sales among specific groups.^{26–42} They discovered that products with higher menthol levels and stronger perceived menthol sensations suited long-term smokers of menthol cigarettes, and milder brands with lower menthol levels appealed to younger smokers. According to R.J. Reynolds,

All three major menthol brands (Salem, Kool, Newport) built their franchise with YAS [younger adult smokers] . . . using a low menthol product strategy. However, as smokers accustom to menthol, their demand for menthol

increases over time. . . . Responsive brands whose strategy is to maximize franchise acceptance invariably increase menthol levels over time.⁴³

Newport. Introduced in 1957, Newport was "developed to appeal to consumer demand for a lightly mentholated product," according to its manufacturer, Lorillard.⁴⁴ It achieved steady market growth throughout the 1970s and 1980s, while maintaining low menthol levels, in contrast to the strategy of its main competitors, Kool and Salem.⁴⁵ By 1992, Newport had gained the top position in the menthol market, with particular success among younger adults. R.J. Reynolds attributed the appeal of Newport among younger adults to its lower menthol content, observing in 1987 that "the want for less menthol does indeed skew younger adult."⁴⁶

Newport maintained a lower level of menthol during the 1970s and early 1980s, and Newport's competitors attributed its historical success among younger adults to its lower menthol content.^{45,47,48} From the 1980s onward, all other major menthol brands actively pursued a low-level menthol formulation to attract this market.

Salem. In 1987, R.J. Reynolds identified marketing low-level menthol varieties as a new brand strategy to persuade consumers to switch from nonmenthol brands and to recruit new, young smokers, noting, "First-time smoker reaction is generally negative. . . . Initial negatives can be alleviated with a low level of menthol."⁴⁹ To reposition Salem to appeal to a younger market, and in particular to younger African Americans, R.J. Reynolds reformulated all of its Salem-brand varieties to have lower menthol levels and then evaluated the unannounced change in a test market in 1990. Despite survey problems, the company concluded that Salem sales were not negatively affected by the new formulation.^{50–52}

Today, 2 Salem full-flavor varieties are available nationally: Salem Green Label and Salem Black Label. Introduced in 2003, Salem Black Label is promoted as a lower-menthol choice to young adults; Salem Green Label has a highly mentholated taste that maintains its appeal to older women.^{53–56}

Kool. Beginning in the late 1980s, Brown and Williamson developed Project Menthol Bridge,^{57–63} with the aim to create "a product with a very low menthol loading which will

provide a bridge between the nonmenthol and menthol segments and thereby foster an enlarged menthol segment.”⁶³ Menthol loading refers to the percentage of menthol in the cigarette (referred to in this article as menthol level or content). In 1998, the company identified a lower-level menthol product in its long-term marketing strategies intended to encourage smokers aged 21 to 25 years to switch from nonmenthol to menthol cigarettes and to appeal to consumers of competitive products with lower levels of menthol.⁶⁴

Brown and Williamson concluded that Newport and, increasingly, Marlboro Menthol had stolen Kool’s popularity among beginning smokers. Kool Milds, available since 1972, were identified in a 1990 Brown and Williamson strategic plan as a milder product intended to increase the importance, popularity, and sales of the parent brand to young adult smokers.⁶⁵ In 1994, Milds were repackaged along with Kool Lights and Ultra Lights and positioned to attract Newport smokers.⁶⁶

Marlboro. Marlboro was the leading nonmenthol brand, but its share of the menthol market remained negligible through the mid-1980s.⁶⁷ Philip Morris employed a 2-pronged strategy to increase Marlboro’s share in the menthol market by targeting young adults as well as older smokers (≥ 35 years).⁶⁸ Marlboro needed a lower-menthol product that would cater to young smokers’ sensory needs, as well as a higher-menthol cigarette for older smokers. Marlboro Milds were introduced nationally in March 2000 and became popular among young smokers, particularly White young adults.⁶⁹ The entry of Marlboro Milds into the market coincided with an increase in the menthol level of the regular Marlboro Menthol brand, intended for older smokers.

Menthol Levels and Nicotine Yields

Laboratory analysis demonstrated a broad range of menthol levels among popular commercial menthol brands. Newport, Marlboro Milds, and Salem Black Label cigarettes had the lowest levels of menthol, measured as a percentage of tobacco weight (Table 1).

In addition to menthol content (measured as a percentage of tobacco weight), we ascertained menthol in smoke (measured as mg per

TABLE 1—Menthol Content and Target Groups of Selected Cigarette Brands

Brand	Menthol Content in 2007, ^a %	Changes in Menthol Concentration Since 2000 ^b	Target Groups
Newport ^c	0.32	Decreased menthol concentration by 16% (from 0.38)	Younger smokers ^{19,45–48}
Marlboro Milds ^d	0.36	Maintained menthol concentration since introduction in 2000	Younger smokers ⁶⁹
Salem Black Label ^e	0.37	Decreased menthol concentration by 23% (from 0.48) from Salem parent brand	Modern urban smokers aged 21–34 years; Newport and Kool smokers ^{54,75,76}
Salem Green Label ^f	0.44	Decreased menthol concentration by 8% (from 0.48) from Salem parent brand	Salem smokers; Marlboro Menthol smokers ⁵⁴
Camel Menthol ^g	0.47	Increased menthol concentration by 9% (from 0.43)	Younger smokers; Newport and Marlboro smokers ⁷⁷
Kool ^h	0.48	Decreased menthol concentration by 7% (from 0.52)	Urban, multicultural young adults ^{78,79}
Marlboro Menthol ⁱ	0.55	Increased menthol concentration by 25% (from .044) after introduction of Milds	Smokers aged ≥ 35 ^{80,81}
Kool Milds ^j	0.63	Decreased menthol concentration by 5% (from 0.66)	Younger smokers ⁷⁹

Note. All brands were full-flavor king size.

^aMeasured as a percentage of tobacco weight.

^bData from internal industry documents.^{70–74}

^cLowest menthol level of all brands tested.

^dLowest menthol loading of Marlboro mentholated varieties.

^eLower menthol style; split from Salem parent in 2003 and rebranded.

^fHigher menthol style; split from Salem parent in 2003.

^gIntroduced in 1997, used advertising rather than lowering menthol levels to attract younger smokers.

^hOne of 2 R.J. Reynolds priority brands; marketing plan included price promotions.

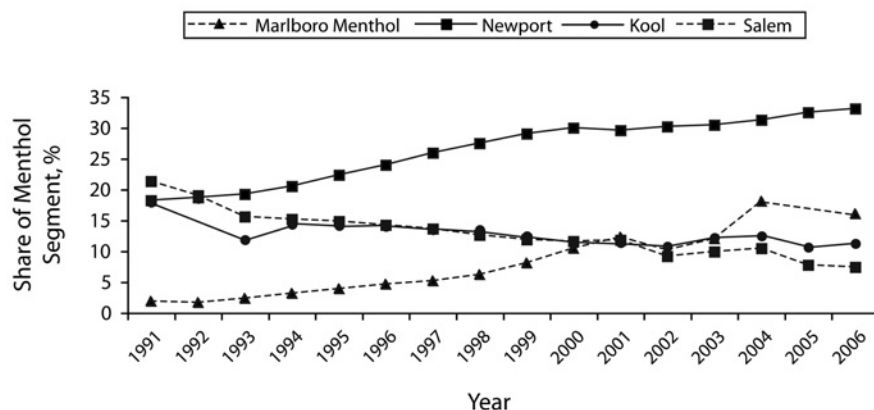
ⁱIntroduction of Marlboro Milds enabled Philip Morris to increase menthol levels in Marlboro Menthol to appeal to long-term smokers.

^jRelaunched in 1994 with higher menthol loading than parent product. Two additional varieties were introduced to market in 2007 with the same machine-measured smoke nicotine and tar yields (Federal Trade Commission measurement) as Kool Milds, but with lower menthol loading (Kool Flow, 0.45; Kool Groove, 0.47; Arista Laboratories, Richmond, VA).

cigarette). Under Federal Trade Commission smoking conditions, the 2 Milds brands and Newport had the lowest menthol in smoke (Marlboro Milds, 0.27 mg/cigarette; Kool Milds, 0.34 mg/cigarette; Newport, 0.45 mg/cigarette), followed by Salem Black Label (0.52 mg/cigarette), Kool Full Flavor (0.56 mg/cigarette), Camel Menthol (0.59 mg/cigarette), and Salem Green Label (0.65 mg/cigarette). Under intensive Health Canada smoking conditions, Marlboro Milds, Newport, and Salem Black Label had the least menthol in the smoke for both total and per-puff measures (Marlboro Milds, 0.80 mg/cigarette, 0.09 mg/puff; Newport, 0.88 mg/cigarette, 0.10 mg/puff; Salem Black Label, 0.96 mg/cigarette, 0.09 mg/puff). Kool Milds had the most menthol per puff (0.14 mg), followed by Marlboro Menthol and Camel Menthol (both 0.12 mg). Overall, the smoke menthol rankings were comparable

to the menthol content analysis, with Newport and Marlboro Milds consistently lowest in menthol ranking.

Menthol content and menthol in smoke varied more than nicotine smoke yields. Under Federal Trade Commission conditions, nicotine per puff ranged from 0.11 mg (Marlboro Milds) to 0.16 mg (Newport); nicotine per cigarette ranged from 0.82 mg (Marlboro Milds) to 1.20 mg (Newport). Under intensive smoking conditions, nicotine per puff ranged from 0.22 mg (Marlboro Milds) to 0.26 mg (Camel Menthol and Newport); nicotine per cigarette ranged from 1.91 mg (Marlboro Milds) to 2.56 mg (Camel Menthol). Tests of the ratios of menthol to nicotine in smoke within brands did not show a correlation between Federal Trade Commission and Health Canada smoking conditions (data not shown).



Note. Menthol segment share values were estimated based on available market share data for the following data points: Marlboro Menthol 2001 and 2004; Kool 2001, 2003 to 2006; and Salem 2001, 2003 to 2006. No data were available for Marlboro Menthol segment or market share in 2005.
Source. Data from References 53 and 83-92.

FIGURE 1—Brand share of the menthol segment: 1991–2006.

Promotion of Modified Menthol Brands

Although cigarette sales in the United States declined 22% from 2000 to 2005,^{5,82} sales of menthol cigarettes remained stable. Among major menthol brands, Newport grew by 15%, for a one-third share of the menthol cigarette market in 2006, continuing a decades-long growth trend. Kool and Salem were stable or slightly declined in market share after 2001, each capturing approximately 10% of the market (Figure 1).

Marlboro, a minor menthol brand as recently as 15 years ago (<2% market share), grew to account for more than 15% of the menthol market in 2006 and became the second leading menthol brand.^{84,93} Marlboro Menthol had consistent market share growth throughout the 1990s, particularly among young adult menthol smokers. By 2000, Marlboro Menthol held 6.7% of the total young adult smoker market, Newport had 18.4%, and Kool and Salem had only 1.0% and 0.3%, respectively.⁸⁵ Menthol products accounted for half of Marlboro's total share growth in 2000, the year Marlboro Milds were introduced; the new product was responsible for almost 80% of Marlboro's menthol-category growth that year.^{94,95}

From 1998 to 2005, magazine advertising expenditures for menthol brands increased substantially, from 15% to 50% of all magazine ads for tobacco products (Table 2).

TABLE 2—Magazine Advertising Expenditures on Menthol and Nonmenthol Cigarette Brands, 1998–2005

Year	Annual Expenditures, \$ (millions)	
	Menthol Brands, \$ (millions)	Nonmenthol Brands, \$ (millions)
1998	36.5	309.3
1999	74.6	425.9
2000	71.1	296.5
2001	45.0	156.9
2002	29.0	98.7
2003	55.8	87.0
2004	67.0	82.5
2005	43.8	39.8

Philip Morris reduced spending on magazine advertising after the signing of the Master Settlement Agreement between the tobacco industry and state governments in 1998. In 2004 it ended magazine advertising. The same year, Brown and Williamson merged with R.J. Reynolds and continued to advertise. As a result, all major brands advertised in 2005 were menthol (Newport, Salem, and Kool) or had significant menthol components (Camel). Advertising expenditures for nonmenthol brands declined sharply, from \$309.3 million in 1998 to \$39.8 million in 2005, but expenditures for menthol brands

increased, from \$36.5 million in 1998 to \$43.8 million in 2005.

Age and Race Correlations With Cigarette Choice

National survey data showed that significantly more adolescents and young adults than older persons smoked menthol cigarettes.¹⁸ In 2006, 43.8% (95% confidence interval [CI]=40.6, 47.0) of current smokers aged 12 to 17 years reported that they used menthol cigarettes, as did 35.6% (95% CI=34.0%, 37.2%) of current smokers aged 18 to 24 years. By contrast, 30.6% (95% CI=28.6%, 32.6%) of smokers older than 35 years reported menthol use.

The brands that accounted for more than 80% of cigarettes smoked by adolescents aged 12 to 17 years in 2005 were Marlboro nonmenthol (36%), Newport (20%), Marlboro menthol products, including Milds (14%), Camel nonmenthol products (9%), and Camel menthol products (3%). Among smokers of brands with menthol and nonmenthol varieties (Camel and Marlboro), adolescents and young adults were more likely than were older smokers to choose the menthol option (Table 3).¹⁹

Race was also a factor in use and brand choice. African American adolescents and young adult smokers used menthol as frequently as did older African American smokers, but they were more likely to choose a lower-menthol variety. For menthol smokers, Newport and Marlboro menthol brands were most popular among both African American and White adolescents and young adults. White adolescents and young adults were more likely to use Camel, and African American adolescents and young adults to use Kool (data not shown).

DISCUSSION

We found evidence that the tobacco industry manipulated menthol levels in cigarettes and introduced new menthol brands to gain market share, particularly among adolescents and young adults. Many of the most popular brands among adolescents contained menthol, and adolescents and young adults—particularly Whites—were significantly more likely to smoke menthol cigarettes than were

TABLE 3—Preference for Menthol Varieties of Marlboro and Camel, by Age: 2006

Smoker Age, y	Smokers Who Choose Menthol Cigarettes, % (95% CI)
Marlboro	
12–17	27.6 (24.0, 31.2)
18–25	23.0 (21.3, 24.6)
26–34	12.9 (10.0, 15.8)
≥ 35	10.8 (8.5, 13.0)
Camel	
12–17	27.4 (18.7, 36.2)
18–25	13.1 (10.2, 16.1)
26–34	11.7 (4.4, 19.1)
≥ 35	6.4 (1.6, 11.2)

Note. CI = confidence interval.

Source. Data from the National Survey on Drug Use and Health.¹⁹

older smokers. Manufacturers continued to market menthol brands in magazine advertising; ads for nonmenthol brands fell. New menthol brands were introduced into the market at a rapid pace, despite a provision in the Master Settlement Agreement that prohibited tobacco companies from directly or indirectly targeting youths.

For new or younger smokers, the primary advantage of smoking a menthol cigarette is that the menthol masks the harshness and discomfort of inhaling smoke enough to allow delivery of an effective dose of nicotine. Menthol brands with the greatest market share growth among young adults had the lowest menthol levels (Newport and Marlboro Milds) among the brands we tested. Industry documents provided insight into this phenomenon, suggesting that among adolescents and young adults, lower menthol content reduced harshness, but higher menthol content was perceived as too strong. Despite heavy marketing and promotion, Camel Menthol and Kool (brands with mid-to-high menthol levels) were only marginally successful among this group.

Descriptors such as “mild” may be used by manufacturers to indicate menthol level or menthol flavor intensity to smokers, separate from designations of tar and nicotine delivery (commonly indicated by descriptors such as “light”). Mild menthol products were positioned

to appeal primarily to new menthol smokers. Other varieties provided long-term menthol smokers with a higher menthol level for a stronger menthol taste. For example, Marlboro introduced Marlboro Milds in 2000, with a lower menthol concentration, and raised the menthol content in Marlboro Menthol. Salem branched out with 2 menthol varieties: Salem Green Label had higher menthol loading and targeted older smokers than did Salem Black Label.

Research Needs

Most African American smokers in the United States use menthol cigarettes (>70%, compared with approximately 30% of White smokers).^{96,97} Manufacturers have used advertising and marketing to promote menthol products to African Americans for the past 3 decades.⁹⁸

Health disparities among African American and White smokers led to speculation that menthol cigarette use confers a higher risk for tobacco-related diseases; however, the available evidence remains inconclusive.¹ Recent studies that controlled for factors related to socioeconomic status did not find significant differences in risk for disease between menthol and nonmenthol smokers,⁹⁹ and research on differences in cessation outcomes between these 2 groups had conflicting results.^{100,101} Research is needed to determine short-term outcomes, such as incidence and prevalence of smoking among target populations by menthol status, as well as long-term health and cessation consequences of increased menthol use in the United States.

Limitations

Studies of industry documents have some important limitations, including issues of availability and reliability, which were discussed in previous reports.^{102,103} Data on menthol brand use was taken from the National Survey on Drug Use and Health, which might be subject to misclassification bias in self-reported menthol status.¹ This bias might be larger among certain subgroups, such as adolescents; for example, in 2006, only 83% of adolescents who smoked Newport (an exclusively mentholated brand) also reported that they were menthol smokers, compared with 95% of Newport smokers older than 35

years. We determined use of Marlboro and Camel menthol varieties by the menthol-use survey question, thus possibly underestimating the proportion of users of these varieties.

The laboratory assessment of menthol by brand focused primarily on menthol content in the cigarette, and despite machine-generated smoke data, only limited conclusions can be drawn regarding smoke delivery of menthol.¹⁰⁴ Menthol delivery varies according to the intensity of smoking. Furthermore, because menthol masks irritation and increases the sensation of airflow, it may facilitate deeper inhalation and thus increase exposure to nicotine and other harmful components of tobacco smoke.⁵ However, the precise mechanism of menthol delivery in facilitating nicotine exposure is not known.

Our primary reason for limiting our study to full-flavor cigarettes was to limit the possible confounding effects of ventilation in machine-smoke data. For example, it was previously established that ventilated cigarettes contain increased menthol levels to maintain menthol in smoke.⁵ Additional studies of other types of cigarettes (e.g., “lights”) would be useful. Although we measured smoke delivery with 2 separate smoking protocols, assessment of exposure among smokers requires further research, including investigation of smoking topography and biomarkers of exposure.

Conclusions

Cigarettes are nicotine delivery devices. They are engineered to promote initiation and transition to addiction through design features that make the products more attractive and palatable.^{105,106} Although menthol is not addictive, it may contribute to tobacco addiction by promoting initiation and facilitating inhalation of smoke.^{105,107,108} Inactive ingredients affect the uptake and action of the active drug ingredients in cigarettes.

For decades, tobacco manufacturers have controlled levels of menthol in commercial cigarettes to promote smoking among adolescents and young adults. Manufacturers have marketed brands to this vulnerable population by manipulating sensory elements of cigarettes to promote initiation and dependence. To protect public health, tobacco products should be federally regulated, and

additives such as menthol should be included in that regulation. ■

About the Authors

The authors are with the Division of Public Health Practice, Harvard School of Public Health, Boston, MA.

Requests for reprints should be sent to Jennifer M. Kreslake, MPH, Tobacco Control Research Program, Division of Public Health Practice, Harvard School of Public Health, 401 Park Dr, Boston, MA 02215 (e-mail: jkreslak@hsph.harvard.edu).

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Contributors

J.M. Kreslake, G.F. Wayne, and G.N. Connolly originated and designed the project. J.M. Kreslake collected and analyzed data from internal tobacco industry documents, coordinated laboratory analysis, and conducted the analysis on the National Survey on Drug Use and Health. H.R. Alpert provided data on magazine advertising expenditures. J.M. Kreslake and G.F. Wayne wrote the article, with significant written contributions by H.K. Koh and G.N. Connolly.

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Human Participant Protection

No protocol approval was needed for this study because the survey data and tobacco documents analyzed are publicly available.

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